(2) Instability of a critical function,

(3) Unwanted change in propeller pitch causing improper thrust/overspeed, and

(4) Unwanted action a critical control function resulting in propeller flat pitch or reverse.

(b) Considering the electronic propeller and pitch controls introduce potential failures that can result in hazardous conditions, the following special conditions are proposed:

(1) Each propeller and pitch control system which relies on electrical and electronic means for normal operation must:

(i) Be designed and constructed so that any failure or malfunction of aircraft-supplied power or data will not result in an unacceptable change in propeller pitch setting or prevent continued safe operation of the propeller.

(ii) Be designed and constructed so that no single failure or malfunction, or probable combination of failures of electrical or electronic components, or mechanical and hydraulic interface of the propeller control system, result in a hazardous condition.

(iii) Be tested to its environmental limits including transients (variations) caused by lightning and high intensity radiated fields (HIRF) and demonstrate no adverse effects on the control system operation and performance or resultant damage. These tests shall include, but not be limited to, the following:

(A) Lightning strikes, such as multiple-stroke and multiple-burst

(B) Pin-injected tests to appropriate wave forms and levels

(C) HIRF susceptibility tests

(iv) Be demonstrated by analysis/tests that associated software is designed and implemented to prevent errors that would result in an unacceptable change in propeller pitch or an hazardous condition.

(v) Be designed and constructed so that a failure or malfunction of electrical or electronic components in the propeller control system could not prevent safe operation of any remaining propeller that is installed on the aircraft.

Issued in Burlington, Massachusetts, on January 12, 1995.

Jay J. Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. 95–1532 Filed 1–19–95; 8:45 am]

BILLING CODE 4910–13–M

14 CFR Part 35

[Docket No. 94–ANE–61; Notice No. 35–ANE–03]

Special Conditions; Hamilton Standard Model 568F Propeller

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This document proposes special conditions for the Hamilton Standard Model 568F propeller. This propeller is constructed using all composite blades, a novel and unusual design feature. Part 35 of the Federal Aviation Regulations (FAR's) currently does not address the airworthiness considerations associated with propellers constructed using all composite blades. This notice proposes additional safety standards which the Administrator finds necessary to establish a level of safety equivalent to that established by the airworthiness standards of part 35 of the FAR's.

DATES: Comments must be received on or before February 21, 1995.

ADDRESSES: Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 94–ANE–61, 12 New England Executive Park, Burlington, Massachusetts 01803–5299. Comments may be inspected at this location between 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Martin Buckman, Engine and Propeller Standards Staff, ANE–110, Engine and Propeller Directorate, Aircraft Certification Service, FAA, New England Region, 12 New England Executive Park, Burlington, Massachusetts 01803–5229; (617) 273–7079; fax (617) 270–2412.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rules by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified under **ADDRESSES**. All communications received on or before the closing date for comments, specified under **DATES**, will be considered before taking action on the proposed special conditions. The proposals contained in this action may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposes special conditions. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No. 94–ANE–61.'' The postcard will be date stamped and returned to the commenter.

Availability of Notice of Special Condition

Any person may obtain a copy of this Notice of Special Condition by submitting a request to the FAA, New England Region, Office of the Assistant Chief Counsel, Attention: Rules Docket No. 94–ANE–61, 12 New England Executive Park, Burlington, Massachusetts 01803–5299.

Discussion

Background

On January 26, 1994, Hamilton Standard applied for type certification for a new Model 568F propeller. This propeller is constructed using all composite blades, a novel and unusual design feature. Propellers constructed entirely of composite material have additional airworthiness considerations not currently addressed by part 35 of the FAR's. Those additional airworthiness considerations associated with propellers constructed using all composite blades are propeller integrity following a bird strike, propeller integrity following a lightning strike, and propeller fatigue strength when exposed to the deteriorating effects of in-service use and the environment.

Type Certificate Basis

Under the provisions of § 21.17 of the FAR's, Hamilton Standard must show that the Model 568F propeller meets the requirements of the applicable regulations in effect on the date of the application. Those FAR's are § 21.21 and part 35, effective February 1, 1965, as amended.

The Administrator finds that the applicable airworthiness regulations in part 35, as amended, do not contain

adequate or appropriate safety standards for the Model 568F propeller because it is constructed using composite material. Therefore, the Administrator proposes special conditions under the provisions of § 21.16 of the FAR's to establish a level of safety equivalent to that established in part 35.

Special conditions, as appropriate, are issued in accordance with § 11.49 of the FAR's after public notice and opportunity for comment, as required by §§ 11.28 and 11.29(b), and become part of the type certification basis in accordance with § 21.101(b)(2).

Novel or Unusual Design Features

The Hamilton Standard Model 568F propeller incorporates propeller blades constructed using composite material. This material has fibers that are woven or aligned in specific directions to give the material directional strength properties. These properties depend on the type of fiber, the orientation and concentration of fiber, and matrix material. Composite materials could exhibit multiple modes of failure. Propellers constructed of composite material must demonstrate airworthiness when considering these novel design features.

The requirements of part 35 of the FAR's were established to address the airworthiness considerations associated with wood and metal propellers used primarily on reciprocating engines. Propeller blades of this type are generally thicker than composite blades, and have demonstrated good service experience following a bird strike. Propeller blades constructed using composite material are generally thinner when used on turbine engines, and are typically installed on high performance aircraft. High performance aircraft generally fly at high airspeeds with correspondingly high impact forces associated with a bird strike. Thus, composite propellers must demonstrate propeller integrity following a bird strike.

In addition, part 35 of the FAR's do not currently require a demonstration of propeller integrity following a lightning strike. No safety considerations arise from lightning strikes on propellers constructed of metal because the electrical current is safely conducted through the metal blade without damage to the propeller. Fixed pitched, wood propellers are generally used on engines installed on small, general aviation aircraft that typically do no encounter fling conditions conducive to lightning strikes. Composite propeller blades, however, may be used on turbine engines and high performance aircraft which have an increased risk of lightning strikes. Composite blades may not safely conduct of dissipate the electrical current from a lightning strike. Severe damage can result if the propellers are not properly protected. Therefore, composite blades must demonstrate propeller integrity following a lightning strike. Information on testing for lightning protection is set out in SAE Report AE4L, entitled, ''Lightning Test Waveforms and Techniques for Aerospace Vehicles and Hardware,'' dated June 20, 1978.

Lastly, the current certification requirements address fatigue evaluation only of metal propeller blades or hubs, and those metal components of non-metallic blade assemblies. Allowable design stress limits for composite blades must consider the deteriorating effects of the environment and in-service use, particularly those effects from temperature, moisture, erosion and chemical attack. Composite blades also present new and different considerations for retention of the blades in the propeller hub.

Conclusion

This action affects only the Hamilton Standard Model 568F propeller and future propeller models within this series. It is not a rule of general application, and it affects only the manufacturer who applied to the FAA for approval of this propeller model.

List of Subjects in 14 CFR Part 35

Air Transportation, Aircraft, Aviation safety, Safety.

The authority citation for these special conditions continues to read as follows:

Authority: 49 U.S.C. App. 1354(a), 1421, 1423; 49 U.S.C. 106(g).

The Proposed Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration (FAA) proposes the following Special Conditions for the Hamilton Standard Model 568F Propeller.

(a) For purposes of these special conditions, a hazardous condition is considered to exist for each of the following conditions:

(1) Loss of the propeller blade, or a major portion of a blade.

(2) Overspeed of the propellers.

(3) Unintended movement of the blade below the established minimum inflight blade angle, or to an angle that results in excessive drag.

(4) The inability to feather the propeller when necessary.

(b) In addition to the requirements of Federal Aviation Regulation part 35, the following must be shown:

(1) *BIRD STRIKE*

For propeller of composite construction it must be shown that:.

The propeller can withstand a 4 pound bird strike at the blade's critical radial location when operating at takeoff RPM and liftoff (Vr) speed of a typical aircraft, without giving rise to a hazardous condition and while maintaining the capability to be feathered.

(2) *LIGHTNING STRIKE*

A lightning strike a propeller of a composite construction shall not result in a hazardous condition. The propeller shall be capable of continued safe operation.

(3) *FATIGUE EVALUATION*

A fatigue evaluation must be provided and the fatigue limits determined for each propeller hub, blade, and each primary load carrying component of the propeller. The fatigue evaluation must consider all known and reasonable foreseeable vibration and cyclic load patterns that may be encountered in service. The fatigue limits must account for the efforts of in-service deterioration, such as impact damage, nicks, grooves, galling, or bearing wear; for variations in production material properties; for environmental effects such as temperature, moisture, erosion, chemical attack, etc., that cause deterioration. Issued in Burlington, Massachusetts, on January 12, 1995.

Jay Pardee,

Manager, Engine and Propeller Directorate, Aircraft Certification Service.

[FR Doc. 95–1543 Filed 1–19–95; 8:45 am]

BILLING CODE 4910–13–M

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14 CFR Part 39

[Docket No. 94–CE–26–AD]

Airworthiness Directives; SOCATA Groupe AEROSPATIALE TBM 700 Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This notice proposes to adopt a new airworthiness directive (AD) that would apply to certain SOCATA Groupe AEROSPATIALE (Socata) TBM 700 airplanes. The proposed action would require installing pneumatic deicers on the elevator horn leading edges. Ice accumulation on one of the affected airplanes during flight testing in icing conditions prompted the proposed action. The actions specified in this